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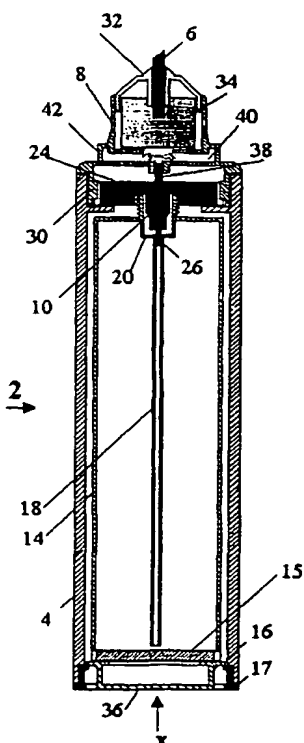
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Declaration under Rule 4.17:

— of inventorship (Rule 4.17(iv)) for US only

[Continued on next page]

(54) Title: A FLUID APPLICATOR INSTRUMENT



(57) Abstract: This invention relates to an instrument, preferably a marking instrument, for applying a fluid to a surface and particularly, though not exclusively, to a writing pen, including a marker pen, or a brush, especially an artist's brush. Other types of brushes are contemplated, such as those for applying cleaner, mouthwash or perfume to teeth. The instrument (2) comprises a tip (6), a holder for the tip (4), a cartridge (14) containing the fluid mounted within or connectable to the holder (4), and a manually-operable spray pump arrangement (10) for repeatedly dispensing a predetermined amount of the fluid under pressure from the cartridge (14) to the tip (4) of the instrument (2). A disposable or re-fillable cartridge for the instrument is also described.

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INTERNATIONAL SEARCH REPORT

International Application No

/GB 01/02031

A. CLASSIFICATION OF SUBJECT MATTER

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According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B43K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 176 461 A (KIMURA) 5 January 1993 (1993-01-05) the whole document ---	1-5,8,9, 11-15, 17-19
X	GB 2 176 393 A (MISUBISHI PENCIL) 31 December 1986 (1986-12-31) the whole document ---	1-5,9, 11-15, 17-19
X	US 5 026 195 A (KIMURA) 25 June 1991 (1991-06-25) the whole document ---	1-5,9, 11-15, 17-19
-/-		

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

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"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"Z" document member of the same patent family

Date of the actual completion of the international search

7 August 2001

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 316 007 A (ANCOS CO) 17 May 1989 (1989-05-17) the whole document	1-3,6,9, 11-15, 17-19
X	US 3 089 465 A (WEST) 14 May 1963 (1963-05-14) the whole document	1-3,6, 11-13, 17,19
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A	EP 0 099 706 A (LINGNER AND FISCHER) 1 February 1984 (1984-02-01) abstract; figures	1,6,17

INTERNATIONAL SEARCH REPORT

International application No.
PCT/GB 01/02031

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
1-19, 33, 34

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-19, 33, 34

INSTRUMENT FOR APPLYING A FLUID WITH A PUMP ARRANGEMENT

2. Claims: 20-32

CARTRIDGE OR REFILLABLE CONTAINER HAVING A PRIMARY AND A SECONDARY RESERVOIR FOR DELIVERING A MEASURED DOSE OF FLUID

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

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CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

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— of inventorship (Rule 4.17(iv)) for US only

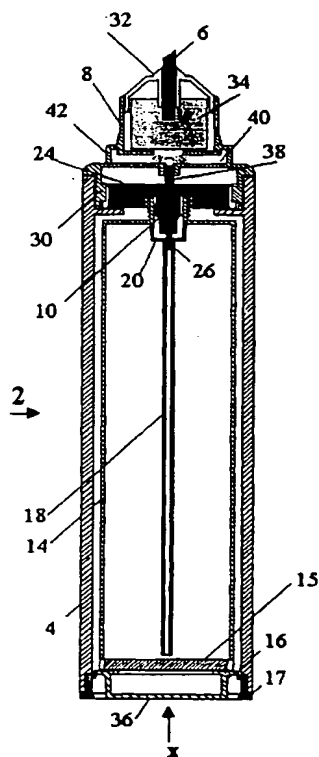
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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

AMENDED CLAIMS

[received by the International Bureau on 17 December 2001 (17.12.01);
original claims 1, 17, 20 and 21 amended; remaining claims unchanged (5 pages)]

1. An instrument for applying a fluid to a surface comprising a fluid-applying tip, a holder for the tip, a cartridge containing a fluid to be applied mounted within or
5 connectable to the holder, and a manually- operable spray pump arrangement for repeatedly dispensing a predetermined amount of the fluid under pressure solely by manual force from the cartridge to the tip of the instrument.
2. An instrument according to claim 1 wherein the holder comprises a casing for
10 the cartridge and a housing for the tip fitted together as a single unit.
3. An instrument according to claim 2 wherein the holder is a tip housing to which the cartridge can be connected
- 15 4. An instrument according to any one of claims 1 to 3, of elongate configuration, wherein the pump arrangement is disposed longitudinally adjacent the tip of the instrument towards one end of the casing, and wherein the cartridge extends away therefrom and is accessible at the other end of the casing such that manual pressure
20 exerted longitudinally on the cartridge at that said other end is effective to operate the pump arrangement
5. An instrument according to claim 4, wherein a component of the pump arrangement is fixed longitudinally within the instrument casing and the cartridge is movable longitudinally therewithin to dispense the fluid.
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6. An instrument according to any one of claims 1 to 3, of elongate configuration, wherein transverse inward manual pressure on the instrument is arranged to move the cartridge and a component of the pump arrangement longitudinally relative to one another, thereby to effect said dispensing of the fluid.
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7. An instrument according to claim 6, wherein the casing is provided with an inwardly-slidable member having a surface inclined to the longitudinal axis of the

instrument that co-operates with a mating surface of the pump arrangement, thereby to effect said longitudinal movement

- 5 8. An instrument according to any one of claims 1 to 3, of elongate configuration, wherein relative rotation of two longitudinal portions thereof is effective to operate the pump arrangement.
- 10 9. An instrument according to any one of the preceding claims, wherein operation of the pump arrangement is arranged to transfer the fluid from the cartridge into a chamber intermediate the cartridge and the tip of the instrument, prior to a subsequent operation of the pump arrangement to dispense the fluid to the tip.
- 15 10. An instrument according to claim 9, wherein the chamber has a transparent wall portion whereby its contents may be visible from outside the instrument.
11. An instrument according to any one of the preceding claims, wherein the pump arrangement and the tip of the instrument are assembled into a single unit.
- 20 12. An instrument according to any one of claims 1 to 10, wherein the pump arrangement and the cartridge are assembled into a single unit.
- 25 13. An instrument according to any one of the preceding claims, in the form of a marking pen.
14. A marking instrument according to claim 13, wherein the tip of the pen comprises a quantity of material, preferably felt, for absorbing marking fluid dispensed from the cartridge.
- 30 15. An instrument according to any one of claims 1 to 12, wherein the tip thereof comprises a brush

16. An instrument according to claim 15 in the form of a toothbrush.
17. An assembly for an instrument for applying a fluid to a surface comprising a disposable cartridge or re-fillable container containing a fluid to be applied and
5 operatively associated therewith a manually- operable spray pump arrangement for repeatedly dispensing a predetermined amount of the fluid under pressure solely by manual force from the cartridge or the container.
18. An instrument assembly according to claim 17, for use with a marker pen,
10 preferably a whiteboard marker pen, a drawing brush, or a toothbrush.
19. A disposable cartridge or re-fillable container for the instrument assembly of claim 17 or claim 18
- 15 20. An instrument according to claim 1 or claim 17 wherein; a replaceable cartridge for use in an implement for applying a fluid to a surface, the cartridge comprising: a primary reservoir for holding a fluid to be applied and having an outlet at one end; a fluid supply tube located, in use, within the primary reservoir, the supply tube being, in use, connected at one end to the outlet and having a secondary reservoir at its other end;
20 wherein, when the cartridge is in a first orientation, a measured dose of the fluid can enter the secondary reservoir, and wherein, when in a second, inverted orientation, no more than the measured dose within the secondary reservoir can be delivered through the supply tube.
- 25 21. An instrument according to claim 1 or claim 17 wherein; a refillable container for use in refilling an implement for applying a fluid to a surface, the container comprising: a primary reservoir for holding a fluid to be applied and having an outlet at one end; a fluid supply tube located, in use, within the primary reservoir, the supply tube being, in use, connected at one end to the outlet and having a secondary reservoir at its
30 other end; wherein, when the container is in a first orientation, a measured dose of the fluid can enter the secondary reservoir, and wherein, when in a second, inverted orientation, no more than the measured dose within the secondary reservoir can be delivered through the supply tube.

22. A container according to claim 21, wherein the supply tube is connected, in use, to an actuator within the instrument for dispensing the fluid into a fluid reservoir connected to the tip of the instrument.
5. 23. A container or cartridge according to any one of claims 20 to 22, wherein the secondary reservoir is formed from an absorbent material such as felt or sponge.
- 10 24. A container or cartridge according to any one of claims 20 to 23, wherein a manually operable spray pump is attached to the one end of the supply tube for dispensing the measured dose of the fluid.
- 15 25. A container or cartridge according to any one of claims 20 to 23 wherein valve means are connected to the one end of the supply tube for dispensing the measured dose of the fluid.
- 20 26. A container or cartridge according to any one of claims 20 to 25, wherein a nozzle is connected to the end of the supply tube.
27. A container or cartridge according to any one of claims 20 to 23, wherein some or all of the measured dose is supplied by squeezing the primary reservoir.
- 25 28. A marking instrument comprising: a marking fluid dispensing means for marking a surface; and a container or cartridge according to any one of claims 20 to 27.
29. A marking instrument according to claim 28, further comprising an actuator for insertion into marking fluid-containing means within the marker.
- 30 30. A marking instrument according to claim 29, wherein the actuator comprises means for engagement with the outlet from the main reservoir and injection means for injecting the marking fluid into the marker.

31. A marking instrument according to claim 30, wherein the injection means is a tube.

5 32. A marking instrument according to any one of claims 28 to 31, wherein the cartridge or container is replaceable or refillable.

33. An instrument, assembly, cartridge or container according to any one of the proceeding claims including valve means provided in the spray pump arrangement for
10 allowing air ingress but preventing liquid egress during inversion thereof.

34. An instrument, assembly, cartridge or container according to claim 33 where the valve means is a check ball valve located in a longitudinal passageway in the body of
15 the spray pump.

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